FACT SHEET FOR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT WA0041041 WILLAPA REGIONAL WASTEWATER TREATMENT PLANT AND INTERIM LIMITS FOR THE EXISTING RAYMOND AND SOUTH BEND WASTEWATER TREATMENT PLANTS

PURPOSE of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for the planned Willapa Regional Wastewater Treatment Plant. This permit also contains interim limits for the current Raymond and South Bend Wastewater Treatment Plants that will be in effect until the new plant has completed startup.

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before we issue the final permit. Copies of the fact sheet and draft permit for the Willapa Regional Wastewater Plant and the interim limits for Raymond and South Bend Wastewater Treatment Plants are available for public review and comment from January 7, 2009 until February 6, 2009. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement**.

Staff/officials from Raymond and South Bend reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any noted errors or omissions regarding the facilities' location, history, discharges, or receiving water.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this Fact Sheet as **Appendix D - Response to Comments**.

SUMMARY

The cities of Raymond and South Bend presently operate separate multi-cell lagoon wastewater treatment plants that discharge to the Willapa River. Ecology issued the previous permits for these facilities on February 6, 1997, and January 31, 1997, respectively. The Cities are now designing a new regional wastewater treatment plant as identified in the cities of South Bend and Raymond Regional General Sewer Plan/Wastewater Facilities Plan prepared by Gray & Osborne, Inc. and approved by Ecology on October 31, 2007. They expect to complete construction by October 2012.

The proposed interim permit effluent limits for the existing Raymond and South Bend plants for Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) and Biochemical Oxygen Demand (BOD_5) respectively, Total Suspended Solids, Fecal Coliform Bacteria, Total Residual Chlorine, and pH remain as they are in the previous permits issued in 1997. Ecology added limits for Equivalent Oxygen Demand (EOD), a function of the concentrations of Total Ammonia and $CBOD_5$ for the months of July through September based on the Dissolved Oxygen Total Maximum Daily Load for the Willapa Estuary (Ecology, 2006).

The permit also contains final limits for the new regional conventional activated sludge facility at the Raymond Treatment Plant site that will replace the existing lagoon plants at Raymond and South Bend. Ecology added final limits for Equivalent Oxygen Demand (EOD), a function of the concentrations of Total Ammonia and $CBOD_5$ for the months of July through September and are based on the Dissolved Oxygen Total Maximum Daily Load for the Willapa Estuary (Ecology, 2006). Water Quality-based ammonia limits were also added to the new regional plant to be protective of the River during the critical low flow period in the summer.

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I. INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 Revised Code of Washington (RCW).

The following regulations apply to municipal NPDES permits:

- Procedures Ecology follows for issuing NPDES permits [chapter 173-220 Washington Administrative Code (WAC)],
- Technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC) and for ground waters (chapter 173-200 WAC)
- Sediment management standards (chapter 173-204 WAC).

These rules require any treatment facility operator to obtain an NPDES permit before discharging wastewater to state waters. They also define the basis for limits on each discharge and for other requirements imposed by the permit.

Under the NPDES permit program Ecology must prepare a draft permit and accompanying fact sheet, and make it available for public review. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments on the draft permit, during a period of thirty days (WAC 173-220-050). (See **Appendix A--Public Involvement** for more detail about the Public Notice and Comment procedures). After the Public Comment Period ends, Ecology may make changes to the draft NPDES permit. Ecology will summarize the responses to comments and any changes to the permit in **Appendix D.**

II. BACKGROUND INFORMATION

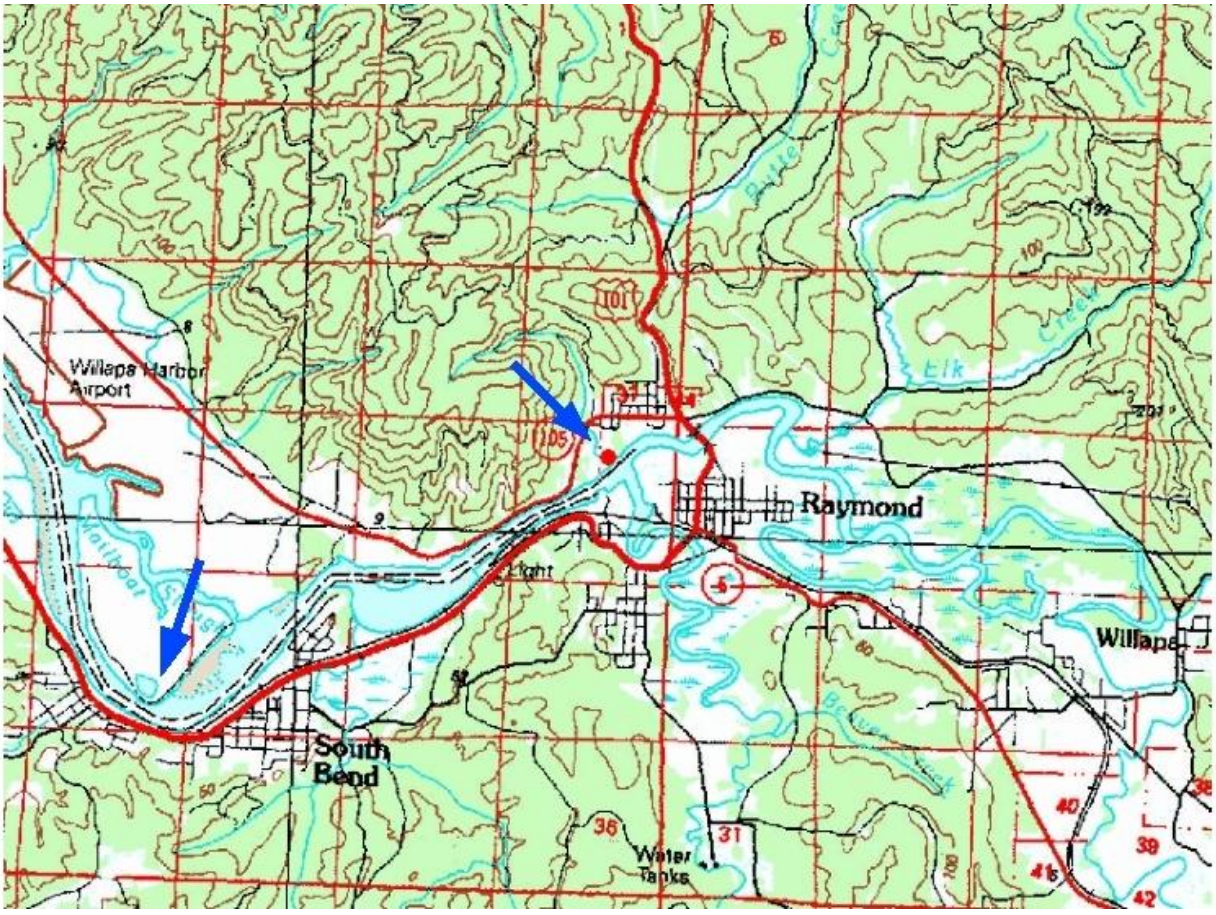
Table 1 - General Facility Information

Applicants:	Cities of Raymond and South Bend
Facility Name and Address:	Willapa Regional Wastewater Treatment Plant 151 Highway 105 Raymond, Washington 98577
Type of Treatment:	Activated Sludge
Discharge Location:	Willapa River (RM 7.0) Latitude: 46º 41' 23" N Longitude: 123º 44' 42" W

Water Body ID Number:	1237037466818
Applicant:	City of Raymond
Facility Name and Address:	Raymond Wastewater Treatment Plant 151 Highway 105 Raymond, Washington
Type of Treatment:	Multi-cell Lagoons
Discharge Location:	Willapa River (RM 7.0) Latitude: 46º 41' 23" N Longitude: 123º 44' 42" W
Water Body ID Number:	1237037466818
Applicant :	City of South Bend
Facility Name and Address:	South Bend Wastewater Treatment Plant 1st Street and Willapa Avenue South Bend, Washington
Type of Treatment:	Aerated/facultative lagoons
Discharge Location:	Willapa River (RM 3.5) Latitude: 46º 40' 02" N Longitude: 123º 48' 11" W
Water Body ID Number:	1237037466818

The Raymond and South Bend plants discharge into the Willapa River estuary at river miles 7.0 and 3.5, respectively. The Willapa Estuary discharges to Willapa Bay near the Pacific coast in Pacific County. The new regional plant will be located at the existing Raymond plant site.

Figure 1. Facility Location Map



The left arrow in Figure 1 shows the location of the South Bend lagoons while the right arrow identifies the Raymond Treatment lagoons and the new regional facility.

A. Facility Description

History

Raymond:

The city of Raymond (Raymond) constructed most of its sewers from 1910 till 1930. At that time both stormwater and sewage flowed directly into the Willapa River. In the early 1960s, Raymond intercepted all the outfall flows and directed them to a primary treatment lagoon. In 1972, Raymond used an EPA Grant to upgrade 90 percent of its collection system to reduce the extremely high stormwater flows entering the collection system.

From the beginning, the wastewater plant did not meet discharge limits. With flows exceeding 2.5 million gallons per day, the plant designed to treat only 0.67

million gallon per day could not treat the wastewater well enough to meet secondary limits.

EPA funded a treatment plant upgrade to bring the plant into compliance in 1990 by adding aerated lagoons to the existing facultative lagoon. Raymond added a fine bubble aeration system (Biolac) to the lagoons in the early 1990s to accommodate additional industrial loading from the Port of Willapa.

Raymond has just completed a joint General Sewer Plan/Facility Plan with South Bend to join the two wastewater collection systems to one regional wastewater facility at the site of the existing Raymond Wastewater Treatment Plant. The Cities plan to remove one river crossing and replace an existing one. Raymond and South Bend have entered into an inter-local agreement to jointly manage the facility.

South Bend:

The city of South Bend (South Bend) was initially served in the 1890s with combined sewers. The combined sewers discharged directly into the Willapa River. In 1963, South Bend intercepted all the flow and pumped it across the River to a newly constructed two cell facultative lagoon system for treatment. South Bend separated the combined sewer system in the late 1970s, early 1980s and used the existing sewer system as a stormwater drainage system. The new PVC sewer lines conveyed the separated sewage across the river to the treatment plant as before. In 1984 South Bend upgraded the treatment plant by adding two aerated lagoons upstream of the existing facultative ponds to increase the overall capacity. They also added chlorination and de-chlorination units.

Collection System Status

Raymond:

The current Raymond sewer system consists of fourteen pump stations, approximately 90,000 feet of gravity pipe and about 17,000 feet of pressure sewer lines. The majority of the sewage is conveyed by gravity to the pump stations on the south side of the Willapa River to Pump Stations No. 3 and No. 11, which convey the combined sewage through a pressure line under the Willapa River. Pump Station No. 1 serves the Riverdale area north of the Willapa River and conveys sewage through a pressure line from Riverdale directly to the plant. Ninety (90) percent of the Raymond collection system is approximately 40 years old (1970s), while the remaining ten percent date back to the early 1960s.

The collection system still experiences sewer system overflows at several locations in north and south Raymond due to high infiltration and inflow.

South Bend:

The current South Bend sewer system consists of three major pump stations, approximately 54,000 feet of gravity pipe and about 8,000 feet of pressure sewer

lines. The lines range in size from 3 inches to 10 inches in diameter. Most of the sewer lines in South Bend slope toward the Willapa River so they are mostly gravity sewers. Much of the sewer system dates back to the 1960s through the 1980s with various improvements and stormwater separation taking place during that time frame. Additional improvements made in the mid 2000s resulted in significant reductions in inflow and infiltration. Although significant reductions in flow resulted in the latest improvements, the collection system still has significant levels of infiltration and inflow.

Of the three major pump stations, pump station No. 3 discharges in a gravity line upstream of pump station No. 2. Pump station No. 1 and No. 2 send the flow through a force main to the treatment plant across the river.

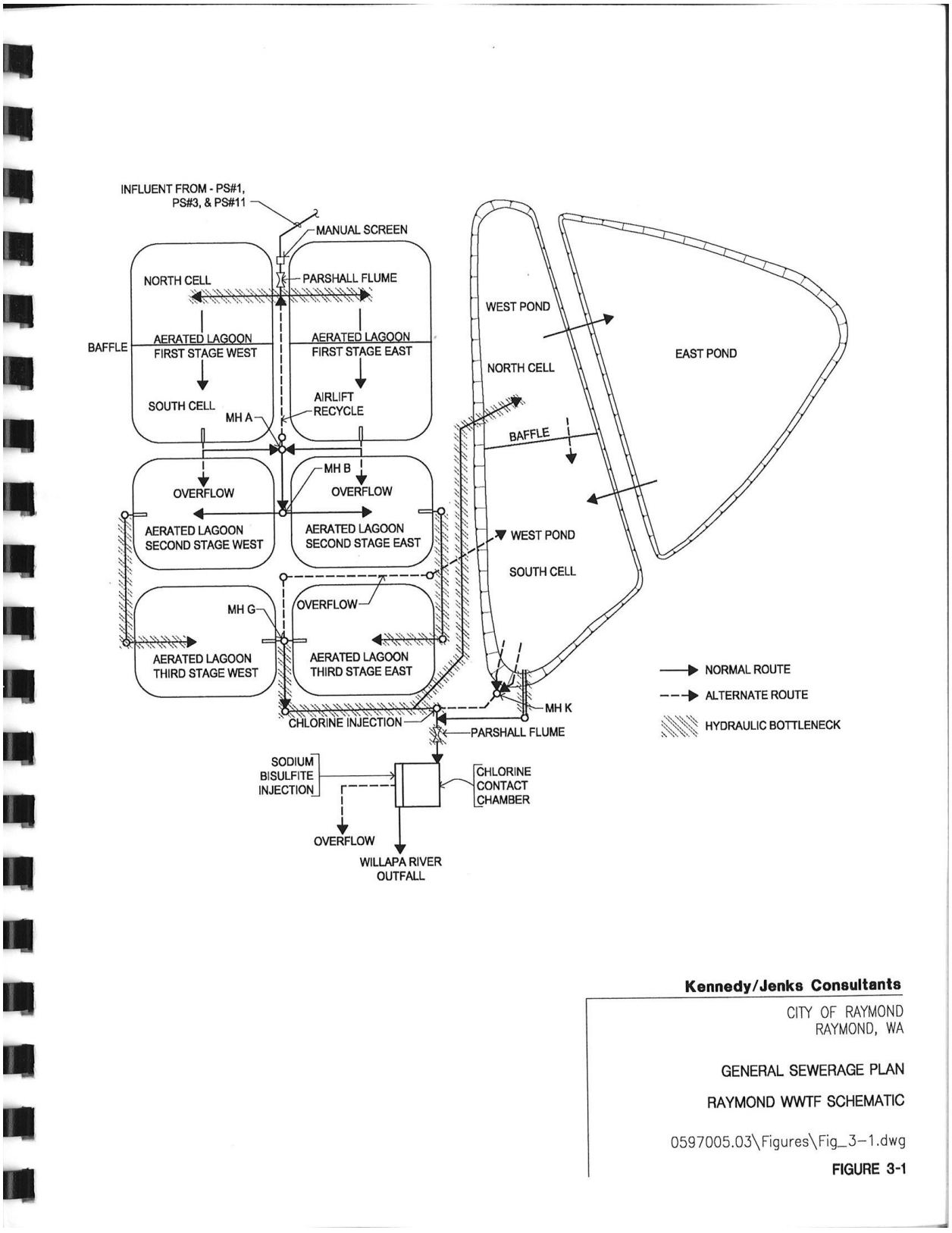
Treatment Processes

Raymond:

The Raymond plant consists of a headworks with flow measurement and coarse bar screening, two trains of three aerated lagoons in series followed by two in series polishing ponds, and effluent metering and chlorination/dechlorination. Raymond has two major industrial dischargers: Weyerhauser and HaloSource, Inc. (formally Vanson). Weyerhauser's lumber mill operation produces a flow that has a high $CBOD_5$ content but relatively low nitrogenous load. Vanson historically discharged crab and shrimp shell processing plant waste with high levels of COD and nitrogen to the port pretreatment plant which discharges to the Raymond collection system. Currently, HaloSource (as they are now known) operations have changed and they now import chitin and chitosan and manufacture chitosan-based products, including flocculants and other products. Based on an Engineering Report submitted by Vanson, the new combined wastewater from Vanson is relatively high in concentration of BOD, COD, and TDS, but low in nitrogen. Recent daily average discharge volumes have been less than 1,000 gallons, with less than 10,000 total gallons discharged per month. Additionally, the plant receives leachate trucked from a nearby landfill.

The Raymond plant is classified as a Group II plant. The operator in responsible charge is certified at the Group III level. The backup operator is certified at the Group II level. The plant is staffed full time five days per week and part time on the weekend.

Figure 2: Raymond Wastewater Treatment Plant

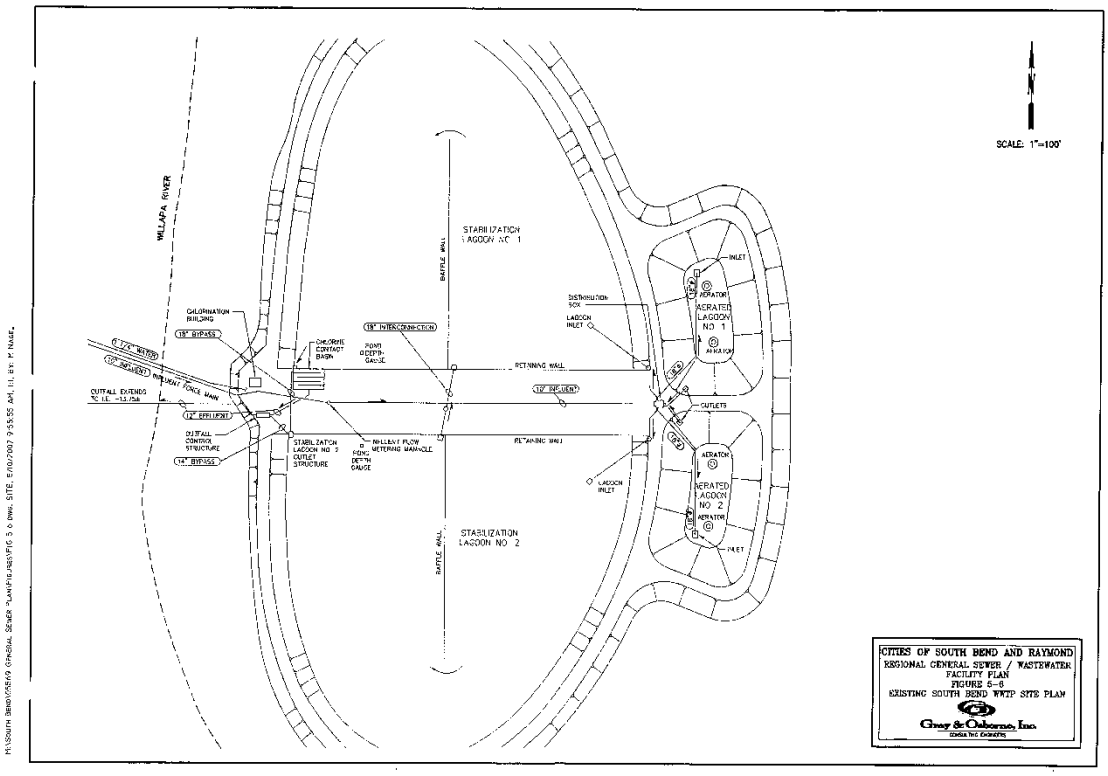


South Bend:

The South Bend plant consists of an influent diversion structure with coarse bar screen, two parallel partial mix aerated lagoons followed by two large, shallow facultative ponds, a chlorine contact chamber with chlorination, and flow metering. The plant discharges via a 12-inch submerged outfall pipe to the Willapa River. No industries discharge process water to South Bend.

The South Bend plant is classified as a Group I plant. The operator in responsible charge is certified at the Group I level. The plant is staffed part time five days per week with part time coverage on the weekend.

Figure 3: South Bend Wastewater Treatment Plant



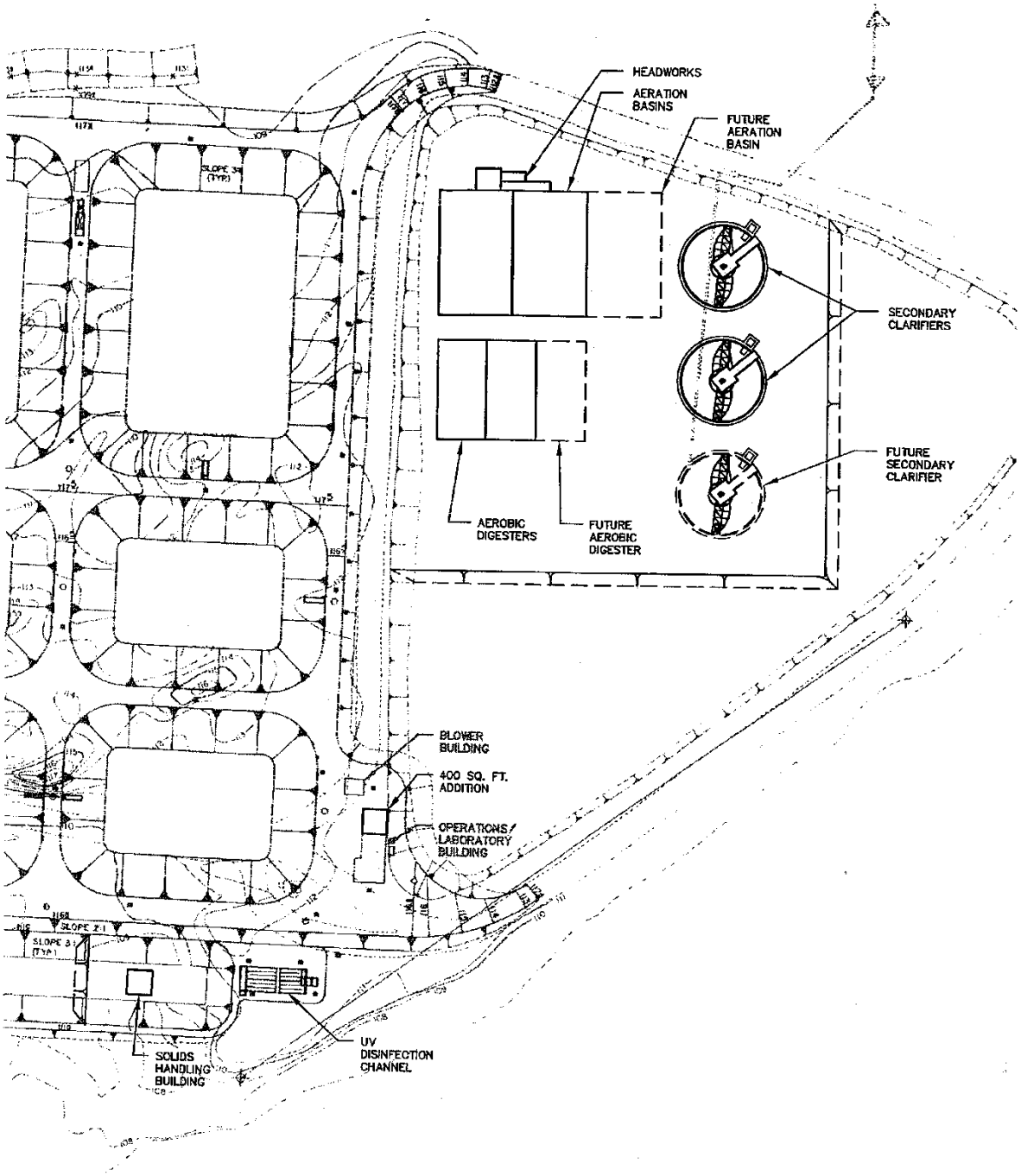
Willapa Regional Wastewater Treatment Plant:

The planned Willapa Regional Wastewater Treatment Plant (WRWWTP) will be located on a portion of the existing Raymond Wastewater Treatment Plant polishing lagoon. During the construction of the new plant, a temporary slight reduction if effluent quality may occur due to the reductions in the polishing volumes. The WRWWTP will consists of a headworks with flow measurement, rotary fine screen, bypass bar screening, two aeration basins, two secondary clarifiers, UV disinfection, two aerobic digesters, and an Exceptional Quality (EQ) biosolids treatment system. Two major industrial dischargers, Weyerhauser and HaloSource, Inc., as described above, will discharge to the WRWWTP.

Additionally, the plant will continue to receive leachate that is currently being trucked to the Raymond Plant from a nearby landfill.

Ecology has classified the planned Raymond-South Bend Regional Wastewater Treatment Plant as a Group III plant. The operator in responsible charge must be certified at the Group III level and the backup operator must be certified at the Group II level. The Cities plan to staff the plant full time five days per week and part time on the weekend.

Figure 4: Willapa Regional Wastewater Treatment Plant (Preliminary Figure) – The plant processes/layout may change during design.



Discharge Outfall

Raymond:

The treated and disinfected effluent flows into the Willapa River through a submerged 12-inch outfall that tees to two 20-foot sections of pipe parallel to the current.

South Bend:

The treated and disinfected effluent flows in the Willapa River through a submerged 8-inch outfall pipe which terminates in a single port 8-inch diffuser opening at right angle to the current.

Willapa Regional Wastewater Treatment Plant:

The project includes a new 18-inch outfall and diffuser system to handle the increase in flow.

Solid Wastes

Both the Raymond and South Bend treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Rags and other screened debris are drained and disposed of as solid waste at the local landfill. Solids removed from the lagoons of both plants are removed and land applied under a permit from the Pacific County Health District.

B. Permit Status

Raymond:

Ecology issued the previous permit for this facility on January 31, 1997. The previous permit placed effluent limits on $CBOD_5$, Total Suspended Solids, Fecal Coliform Bacteria, pH, and Total Chlorine Residual.

Raymond submitted an application for permit renewal on March 26, 2008. Ecology accepted it as complete on April 9, 2008.

South Bend:

Ecology issued the previous permit for this facility on February 6, 1997. The previous permit placed effluent limits on BOD_5, Total Suspended Solids, Fecal Coliform Bacteria, pH, and Total Chlorine Residual.

South Bend submitted an application for permit renewal on February 28, 2007. Ecology accepted it as complete on March 15, 2007.

Willapa Regional Wastewater Treatment Facility:

The regional facility is yet to be constructed. The estimated completion date is October 2012.

C. Summary of Compliance with Previous Permit Issued

Raymond:

Ecology staff last conducted a non- sampling compliance inspection on August 22, 2006.

From March 24, 2003, through March 24, 2008, the Raymond Plant effluent has not met the following effluent limit parameters:

Effluent $CBOD_5$, mg/L, AVG – 1 violation

Effluent Total Chlorine Residual, lbs/day – 1 violation

Effluent Total Chlorine Residual, mg/L – 1 violation

Effluent Total Suspended Solids, lbs/day, AVW – 3 violations

Effluent Total Suspended Solids, mg/L, AVG – 3 violations

Effluent Total Suspended Solids, mg/L, AVW – 3 violations

Influent Flow, mgd, AVG – 2 violations

Effluent Total Chlorine Residual, lbs/day, MXD – 2 violations

A WET effluent characterization test completed on the effluent showed toxicity. Since the species impacted were the fish, Ecology believes the most likely toxin is ammonia rather than metals or other toxins.

South Bend:

Ecology staff last conducted a non- sampling compliance inspection in mid 1980s.

From March 24, 2006, through March 24, 2008, the South Bend Plant has not met the following effluent limit parameters:

Effluent BOD_5, lbs/day, AVG – 5 violations

Effluent BOD_5, lbs/day, AVW – 6 violations

Effluent BOD_5, mg/L, AVG – 4 violations

Effluent BOD_5, mg/L, AVW – 6 violations

Effluent BOD_5, percent removal, AVG – 2 violations

Effluent Total Chlorine Residual, µg/L, MXD – 1 violation

Effluent pH, standard units, Min. – 1 violation

Effluent Total Suspended Solids, percent removal, AVG – 10 violations

Effluent Total Suspended Solids, lbs/day, AVG – 1 violation

Effluent Total Suspended Solids, lbs/day, AVW – 2 violations

Effluent Total Suspended Solids, mg/L, AVG – 2 violations

Effluent Total Suspended Solids, mg/L, AVW – 3 violations

Influent Total Suspended Solids, lbs/day, AVG – 3 violations

D. Wastewater Characterization

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 2A: Raymond Wastewater Characterization

Parameter	Average Concentration	Maximum Concentration
Carbonaceous Biochemical Oxygen Demand, 5 day	10.7 mg/L	34 mg/L
Total Suspended Solids	13.7 mg/L	61 mg/L
Fecal Coliform bacteria	16.6 colonies/100 mL	307 colonies/100 mL
Parameter	**Minimum Value**	**Maximum Value**
pH	6.34 S.U.	8.54 S.U.
Temperature	12.8 °Centigrade	23.1 °Centigrade
Flow Rate	Average: 0.67 mgd	Max.: 2.67 mgd

Table 3B: South Bend Wastewater Characterization

Parameter	Average Concentration	Maximum Concentration
Biochemical Oxygen Demand, 5 day	20.9 mg/L	68 mg/L
Total Suspended Solids	45.7 mg/L	320 mg/L
Fecal Coliform bacteria	31.6 colonies/100 mL	790 colonies/100 mL
Parameter	Minimum Value	Maximum Value
pH	6.1 S.U.	9.55 S.U
Temperature	15.5 °Centigrade	23.5 °Centigrade
Flow Rate	Average: 0.43 mgd	1.62 mgd

E. State Environmental Policy Act (SEPA) Compliance

Both the Raymond and South Bend permits are in compliance with SEPA.

III. PROPOSED PERMIT LIMITS

This section includes information pertinent to development of the regional facility effluent limits. Ecology listed the Raymond, South Bend, and the WRWWTP's design criteria below. The permit includes interim limits for the Raymond and South Bend existing lagoon plants as shown

below. The interim limits for Raymond and South Bend remain in effect until the completion of startup of the new regional wastewater treatment plant. Both the interim and final limits will satisfy the current Willapa River TMDL requirements for $CBOD_5$ and ammonia loading.

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis [40 Code of Federal Regulations (CFR) 125.3, and chapter 173-220 WAC].

- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36).

- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application. Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, or do not have a reasonable potential to cause a water quality violation.

Nor does Ecology usually develop limits for pollutants that were not reported in the permit application but that may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. If significant changes occur in any constituent of the effluent discharge, WRWWTP is required to notify Ecology [40 CFR 122.42(a)]. WRWWTP may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

A. Design Criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for this facility's treatment plant were obtained from the cities of South Bend and Raymond Regional General Sewer Plan/Wastewater Facilities Plan prepared by Gray & Osborne, Inc. and approved by Ecology on October 31, 2007.

Table 4A: Design Criteria for Raymond Wastewater Treatment Plant.

Parameter	Design Quantity
Monthly average flow (max. month)	1.50 MGD
Instantaneous peak flow	2.5 MGD
BOD_5 influent loading	1,100 lbs/day
TSS influent loading	1,780 lbs/day

Table 5B: Design Criteria for South Bend Wastewater Treatment Plant.

Parameter	Design Quantity
Monthly average flow (max. month)	0.69 MGD
BOD_5 influent loading	608 lbs/day
TSS influent loading	608 lbs/day

Table 6C: Design Criteria for Willapa Regional Wastewater Treatment Plant.

Parameter	Design Quantity
Monthly average flow (max. month)	2.91 MGD
Peak day flow	5.91 MGD
Peak hour flow	7.66 MGD
BOD_5 influent loading (max. month)	2,218 lbs/day
TSS influent loading (max. month)	2,891 lbs/day
NH3-N (max. month)	324 lbs/day
TKN (max. month)	573 lbs/day

B. Technology-Based Effluent Limits

Federal and state regulations define technology-based effluent limits for municipal wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for municipal wastewater.

Chapter 173-221 WAC lists the following technology-based limits for pH, fecal coliform, BOD_5, and TSS:

Table 4: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L (or 25 mg/L $CBOD_5$) - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L (or 38 mg/L $CBOD_5$)

Parameter	Limit
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limit for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/L.

The existing permits for the Raymond and South Bend plants have chlorine limits. The proposed permit does not include a chlorine limit for the new regional wastewater plant because it will not use chlorine as the method of disinfection. The facility will instead use ultraviolet light. The proposed interim chlorine limits for the Raymond and South Bend plants will remain the same as they are now until the Cities complete startup of the new regional plant.

The following technology limits are for the new Willapa Regional Wastewater Treatment Plant.

The technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent $CBOD_5$ mass loadings (lbs/day) = maximum monthly influent design loading (2218 lbs/day) x 0.15 x (25/30 conversion factor) = 277 lbs/day.

Monthly effluent TSS mass loadings (lbs/day) = maximum monthly influent design loading (2891 lbs/day) x 0.15 = 434 lbs/day.

The weekly average effluent $CBOD_5$ mass loading = 1.5 x monthly loading = 416 lbs/day.

The weekly average effluent TSS mass loading = 1.5 x monthly loading = 650 lbs/day.

C. Surface Water Quality-Based Effluent Limits

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510).

Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (EPA 1992). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The Water Quality Standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

Narrative water quality criteria (WAC 173-201A) limit concentrations of toxic, radioactive, or deleterious material. Levels are set below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh and marine surface waters in the state of Washington.

Antidegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).

- Apply three Tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

This facility must meet Tier I requirements.

- Existing and designated uses must be maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.

Ecology's analysis described in this section of the fact sheet demonstrates that the existing and designated uses of the receiving water will be protected under the conditions of the proposed permit.

Mixing Zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the diluting wastewater doesn't interfere with designated uses of the receiving water body (e.g., recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control and treatment (AKART). Mixing zones typically require compliance with water quality criteria within 200 to 300 feet from the point of discharge; and use no more than 25 percent of the available width of the water body for dilution. We

use modeling to estimate the amount of mixing within the mixing zone. Through modeling we determine the potential for violating the water quality standards at the edge of the mixing zone and derive any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's Permit Writer's Manual). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 10 means the effluent is 10 percent and the receiving water is 90 percent of the total volume of water at the boundary of the mixing zone. We use dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life **acute** criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life **chronic** criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

1. Ecology must specify both the allowed size and location in a permit.

The proposed permit specifies the size and location of the allowed mixing zone.

2. The facility must fully apply "all known available and reasonable methods of prevention, control and treatment" (AKART) to its discharge.

Ecology has determined that the proposed treatment provided at The Raymond-South Bend Regional Wastewater Treatment Plant meets the requirements of AKART (see "Technology based Limits").

3. Ecology must consider critical discharge conditions.

Surface water quality-based limits are derived for the water body's critical condition (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or designated water body uses). The critical discharge condition is often pollutant-specific or water body-specific.

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology uses the water depth at mean lower low water (MLLW) for marine waters and estuaries. Ecology's Permit Writer's Manual describes additional guidance on criteria/design conditions for determining dilution factors. The Manual can be obtained from Ecology's website at: http://www.ecy.wa.gov/biblio/92109.html.

Ecology used the following critical conditions to model the discharge:

- Water depth at MLLW of 19.26 feet.
- Density profile with a difference of 3 sigma-t units between 19.26 feet and the surface.
- 50th percentile current speeds of 47 cm/sec for chronic and human health mixing zones.
- 10th percentile current speed of 13 cm/sec for acute mixing zone.

- 90th percentile current speed of 82 cm/sec for acute mixing zone.
- Maximum average monthly effluent flow of 2.91 million gallons per day (MGD) for chronic and human health non-carcinogen.
- Annual average flow of 1.25 MGD for human health carcinogen.
- Maximum daily flow of 5.91 (MGD) for acute mixing zone.
- 1 DAD MAX Effluent temperature of 16 degrees C.

Ambient data at critical conditions in the vicinity of the outfall was taken from a Mixing Zone Study conducted by Cosmopolitan Engineering Group in September, 2006.

4. Supporting information must clearly indicate the mixing zone would not:

- **Have a reasonable potential to cause the loss of sensitive or important habitat,**
- **Substantially interfere with the existing or characteristic uses,**
- **Result in damage to the ecosystem, or**
- **Adversely affect public health.**

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms, and set the criteria to generally protect 95 percent of the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for four days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of being discharged.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than 2 seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with whole effluent toxicity (WET) testing.

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics and the discharge location. Based on this review we conclude that the discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem or adversely affect public health

5. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.

Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant. We concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone.

6. The size of the mixing zone and the concentrations of the pollutants must be minimized.

At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. Because tidal currents change direction, the plume orientation within the mixing zone changes. The plume rises through the water column as it mixes therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will not mix with the discharge. Ecology determined it is impractical to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed the discharge is more completely mixed with the receiving water in a shorter time. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95^{th} percentile pollutant concentration, the 90^{th} percentile background concentration, the centerline dilution factor and the lowest flow occurring once in every 10 years to perform the reasonable potential analysis.

Because of the above reasons, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

7. Maximum size of mixing zone.

The authorized mixing zone does not exceed the maximum size restriction.

8. Acute Mixing Zone.

- **The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.**

  Ecology determined the acute criteria will be met at ten percent of the distance (or volume fraction) of the chronic mixing zone at the ten year low flow.

- **The pollutant concentration, duration and frequency of exposure to the discharge, will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.**

  As described above the toxicity of any pollutant depends upon the exposure, the pollutant concentration and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organisms near the point of discharge (below the rising effluent).

- **Comply with size restrictions.**

  The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

9. Overlap of Mixing Zones.

This mixing zone does not overlap another mixing zone

D. Description of the Receiving Water

The Willapa Regional Wastewater Plant will discharge to the Willapa River at river mile 7.0. Other nearby point source outfalls includes the South Bend Wastewater Treatment Plant, South Bend Packers, Coast Seafood, and Dungeness Development Associates, Inc at river mile 3.0.

The ambient background data used for this permit includes the following from the Raymond Mixing Zone Study, September 2006:

Table 7: Ambient Background Data

Parameter	Value used
Marine water parameters	
Temperature (90th Percentile)	20.0 ^{o}C

Parameter	Value used
Temperature (10th Percentile)	8.2 ^{o}C
pH (90th/10th Percentile)	7.96/7.44
Dissolved Oxygen	6.0 mg/L dry weather
Total Ammonia-N (90th/10th Percentile)	113/8 mg/L
Fecal Coliform (at 101 Highway bridge)	17/100 mL dry weather (900/100 mL storm related)
Conductivity	30,000 – 40,000 uS during critical period
Salinity (90th/10th Percentile)	23.3/2.8 psu
Density (sigma-t) profiles, 4 cases from 0.5 meter to 6 meter depth.	February: 7.5 – 8.9 May: 0.4 – 1.9 August: 13.5 – 15 November: 1.8 - 5
Lead	0.02 µg/L
Copper	1.2 µg/L
Zinc	0.6 µg/L
Cadmium	0.02 µg/L
Mercury	0.006 µg/L
Chromium	0.2 µg/L
Silver	0.02 µg/L

E. Designated Uses and Surface Water Quality Criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). Criteria applicable to this facility's discharge are summarized below in **Table 5**.

- Aquatic life uses are designated using the following general categories. All indigenous fish and nonfish aquatic species must be protected in waters of the state.

  1. **Extraordinary quality** salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

  2. **Excellent quality** salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

3. **Good quality** salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

4. **Fair quality** salmonid and other fish migration.

The Aquatic Life Uses for this receiving water are identified below.

Table 8: Aquatic Life Uses & Associated Criteria (Marine)

Excellent quality	
Temperature Criteria – Highest 1D MAX	16°C (60.8°F)
Dissolved Oxygen Criteria – Lowest 1 Day Minimum	6.0 mg/L
Turbidity Criteria	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH Criteria	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

Freshwater fecal coliform criteria were applied to the Willapa River at the Willapa Regional Wastewater Treatment Plant discharge location (RM 7.0). This was done because the potentially impacted shellfish beds are far downstream in Willapa Bay. The Washington State Department of Health, Shellfish agreed. There is sufficient mixing and travel time to dissipate and dilute fecal coliform down to marine standards by the time the Willapa waters at RM 7.0 actually reached the shellfish beds in the Bay. The line of demarcation between saltwater coliform regulations and freshwater coliform regulations was stipulated to be at river mile 1.8. Any discharges upstream of RM 1.8 have to meet a fecal coliform limit of 100/200 at the boundary of the chronic mixing zone. The fecal coliform standard is based on the following water quality use based criteria:

- The recreational use is primary contact recreation. The recreational use for this receiving water is identified below.

Table 9: Aquatic Life Uses & Associated Criteria (Freshwater for Fecal Coliform Only)

Recreational use	**Criteria**
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL

- The **water supply use**s are domestic, agricultural, industrial, and stock watering.
- The **miscellaneous fresh water use**s are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

- The **miscellaneous marine water uses** are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

F. Evaluation of Surface Water Quality -Based Effluent Limits for Numeric Criteria and Willapa River Total Maximum Daily Loads for Dissolved Oxygen ($CBOD_5$, NH_3) and Fecal Coliform

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

With technology-based controls (AKART), predicted pollutant concentrations in the discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC.

The diffuser at Outfall 001 is 40 feet long with a diameter of 18 inches. The diffuser has a total of two 12 inch diameter ports. The distance between ports is forty feet. The diffuser depth is 19.26 feet at mean lower low water (MLLW). Ecology obtained this information from the Dilution Ratio Study Report submitted on September 2006.

Chronic Mixing Zone

WAC 173-201A-400(7)(b) specifies that mixing zones must not extend in any horizontal direction from the discharge ports for a distance greater than 200 feet plus the depth of water over the discharge ports as measured during MLLW.

The horizontal distance of the chronic mixing zone is 220 feet. The mixing zone extends from the riverbed to the top of the water surface.

Acute Mixing Zone

WAC 173-201A-400(8)(b) specifies that in estuarine waters a zone where acute criteria may be exceeded must not extend beyond ten percent of the distance established for the chronic zone. The acute mixing zone for Outfall 001 extends 22 feet in any direction from any discharge port.

Ecology determined the dilution factors that occur within these zones at the critical condition using Visual Plumes and data from a document titled Mixing Zone Study, September 2006. The dilution factors were revised slightly from the Cosmopolitan Report because of new design flows and are listed in Table 7:

Table 10: Dilution Factors (DF)

Criteria	Acute	Chronic
Aquatic Life	17	38
Human Health, Carcinogen		38
Human Health, Non-carcinogen		38

Ecology determined the impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform, chlorine, ammonia, metals, nutrients and other toxics as described below, using the dilution factors in the above table. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

Ecology completed a TMDL study of the dissolved oxygen deficiency and fecal coliform impacts on the lower Willapa River/Estuary.

$CBOD_5$ and Ammonia as Nitrogen (NH3-N) Limits

Willapa River Dissolved Oxygen, Total Maximum Daily Load (Water Clean Up Plan)

Ecology has listed the Lower Willapa River under section 303(d) of the federal Clean Water Act as not meeting water quality standards for dissolved oxygen (DO) and fecal coliform bacteria. The Lower Willapa River was placed on the 1998 303(d) list of "five excursions beyond the criterion out of 42 samples (12 percent) at Ecology ambient monitoring station WPA001 between 1991 and 1996 (Cosmopolitan Engineering 2005). These five measurements below the 6.0 mg/L criteria took place during the months of July through September. State water quality standards (WAC 173-201A-612) classify the lower Willapa River as Class A marine water. Applicable marine criteria require that DO shall exceed 6.0 mg/L. Ecology has monitored the Lower Willapa River since the early 1970s and has recorded DO below the state water quality standards of 6.0 mg/L several times during late summer and early fall (July through September).

The study of June 2005 (Cosmopolitan Engineering, 2005) included computer modeling to quantify the effects of carbonaceous biochemical oxygen demand ($CBOD_5$) and inorganic ammonia (NH_3-N) from each point source. Cosmopolitan found that the river DO was nearly below 6.0 mg/L; back that at build out, the discharge could together cause river DO to drop more than the allowable change under the state standards, 0.2 mg/L (200 µg/L). Cosmopolitan developed from this modeling, an equation that describes calculation of compliance with the standards. The equation is stated in terms of Equivalent Oxygen Demand (EOD), which includes both carbonaceous biochemical oxygen demand and ammonia. Ecology considers that any combination of waste loads (in lbs/day) that satisfies this equation- no more than 199 µg/L of EOD complies with this limit. If total EOD in any week is greater than 199 µg/L and a discharger exceeds the total individual EOD allocation for any week, it will violate its limit.

The equation applies to five entities; city of South Bend, city of Raymond, East Point Seafood Company (now Dungeness Development), South Bend Packers, and Coast Seafoods. The 'equation' is simply a calculation to figure the maximum amount of BOD and ammonia that each facility can discharge so that the total discharges do not violate the water quality criteria. The five facilities have agreed to these specific WLAs that combines the effects of both parameters on DO.

The following table provides the distribution and cumulative wasteload allocations.

Table 11: Wasteload Allocation for Equivalent Oxygen Demand (EOD) before Regionalization (Interim limits – July through September)

Facility	EOD (µg/L)	Formula [(1)]
Raymond WWTP	99	$(0.207)(CBOD_5) + (0.420)(NH_3 – N) \leq 99$
South Bend WWTP	25	$(0.067)(CBOD_5) + (0.132)(NH_3 – N) \leq 25$
East Point Seafoods (Dungeness Development)	45	$(0.031)(CBOD_5) + (0.178)(NH_3 – N) \leq 45$
South Bend Packers	5	$(0.027)(CBOD_5) + (0.155)(NH_3 – N) \leq 5$
Coast Seafoods	15	$(0.019)(CBOD_5) + (0.109)(NH_3 – N) \leq 15$
Reserve	10	
Total WLAs	199	

(1) $CBOD_5$ and NH_3 –N loadings are unit of lbs/day weekly average.

The following table provides the distribution and cumulative wasteload allocations after the combining of the Raymond and South Bend wastewater flows to a new Willapa Regional Plant at the Raymond Treatment Plant site.

Table 12: Wasteload Allocation for Equivalent Oxygen Demand (EOD) after Regionalization (July through September)

Facility	EOD (µg/L)	Formula [(1)]
Willapa Regional WWTP	124	$(0.207)(CBOD_5) + (0.420)(NH_3 – N) \leq 124$
East Point Seafoods (Dungeness Development)	45	$(0.031)(CBOD_5) + (0.178)(NH_3 – N) \leq 45$
South Bend Packers	5	$(0.027)(CBOD_5) + (0.155)(NH_3 – N) \leq 5$
Coast Seafoods	15	$(0.019)(CBOD_5) + (0.109)(NH_3 – N) \leq 15$
Reserve	10	
Total WLAs	199	

[(1)] $CBOD_5$ and NH_3–N loadings are unit of lbs/day weekly average.

$CBOD_5$—In addition to the above water quality based limits; Ecology will apply technology-based limits at the regional plant discharge site.

Temperature--The state temperature standards include multiple criteria, each with different durations of exposure and points of application. Ecology evaluates each criterion independently to determine reasonable potential and permit limits.

- Temperature Chronic Effects

a) Annual summer maximum – Marine water Criteria.

The annual maximum temperature criteria 16 °C protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

This criteria must be met at the edge of the chronic mixing zone boundary.

Marine water criteria are expressed as the highest one-day annual maximum temperature (1-DMax). The 1-DMax used in the following temperature sensitivity analysis came from two years (2002 – 2004) of Ecology stored data from sampling site WPA001 on the Willapa River. Ecology arbitrarily chose a very hot 30 deg. C. effluent temperature to show that there was very little potential to raise the 1-DMax above the 0.3 deg. C increase allowed by Ecology's temperature standards.

Incremental warming criteria

Some waters are naturally incapable of meeting their assigned threshold temperature criteria. At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3 °C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3 °C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25 percent or less of the critical flow. This is because the fully mixed effect on temperature will be only a fraction (0.075°C or less) of the 0.3°C cumulative allowance for all human sources combined.

The ambient background temperature ($T_{ambient90}$) is warmer than the threshold criterion, but $T_{chronic}$ is less than ($T_{ambient90}$ + 0.3). Therefore, a

reasonable potential does not exist and an effluent limit is not needed. Ecology calculated the reasonable potential to violate the effluent temperature criteria as follows:

Ecology calculated no reasonable potential for the discharge to exceed the annual summer maximum at the edge of the chronic mixing zone ($T_{chronic}$) during critical condition(s):

$T_{chronic} = T_{ambient90} + (T_{effluent95} - T_{ambient90})/DF.$

$T_{chronic} = 22.41 + (30 - 22.41)/38$

$T_{chronic} = 22.61$ deg. C.

$T_{ambient90} + 0.3 = 22.71$ deg. C >. $T_{chronic}$

Where:

$T_{ambient90}$ = 90th percentile annual maximum 1-DMax (marine water)

$T_{effluent95}$ = 95th percentile 1-Dmax effluent temperature (marine water).

DF = the dilution factor at the critical condition.

Criterion = the assigned threshold temperature criterion (marine 1-Dmax 16 deg. C).

pH-- Compliance with the technology-based limits of 6.0 to 9.0 will assure compliance with the water quality standards of surface waters because of the high buffering capacity of marine water.

Fecal coliform—Ecology modeled the numbers of fecal coliform by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 38. Under critical conditions modeling predicts no violation of the water quality criterion for fecal coliform. In addition, the Willapa River Fecal Coliform TMDL Report established the technology-based limits for fecal coliform (200/400) as the water quality-based waste load allocations. Therefore, the proposed permit includes the technology-based effluent limitation for fecal coliform bacteria.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

The following toxic pollutants are present in the discharge: ammonia, and heavy metals. Ecology conducted a reasonable potential analysis (See Appendix C) to determine whether effluent limits for these pollutants would be required in this permit, using procedures given in EPA, 1991.

Valid ambient background data was available for list pollutants (See Table 10). Calculations using all applicable data show no reasonable potential for this discharge to cause a violation of water quality standards. Ecology's

determination assumes that this facility meets the other effluent limits of this permit.

Table 13: Toxins with no reasonable potential to violate water quality standards

Cadmium
Copper
Lead
Mercury
Silver
Zinc

Ecology derived effluent limits for the toxic pollutant ammonia, determined to have a reasonable potential to cause a violation of the water quality standards. Ecology calculated effluent limits using methods from EPA, 1991 as shown in **Appendix** C.

The effluent limits are as follows:

Table 14: Limits for ammonia based on the mixing zone analysis.

Parameter	Acute	Chronic
Ammonia	23 µg/L	46 µg/L

Ammonia's toxicity depends on that portion which is available in the unionized form. The amount of unionized ammonia depends on the temperature, pH, and salinity of the receiving marine water

G. Whole Effluent Toxicity

The water quality standards for surface waters forbid discharge of effluent that causes toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Using the screening criteria in chapter 173-205-040 WAC, Ecology determined that both Raymond and South Bend's effluent, has the potential to cause aquatic toxicity. The proposed permit requires WET testing as authorized by RCW 90.48.520 and 40 CFR 122.44. However, because the Cities will be combining their flows to a new regional plant to meet other regulatory requirements, WET test results on the current treatment plant discharges will not accurately represent the discharge from the new facility. The proposed permit does not include

additional WET testing until after the Cities have completed construction of the new treatment plant.

Special Condition S2 requires WET testing to begin after the completion or startup of the new or improved wastewater treatment facility described in Special Condition S4 and in this fact sheet. Ecology may delay the start of WET testing while an existing facility implements technology-based controls, or achieves compliance with surface water quality-based effluent limits under a compliance schedule in a permit (WAC 173-205-030(4)).

H. Human Health

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined the applicant's discharge is unlikely to contain chemicals regulated to protect human health

I. Sediment Quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400).

Through a review of the discharger characteristics and of the effluent characteristics, Ecology determined that this discharge has no reasonable potential to violate the Sediment Management Standards.

J. Ground Water Quality Limits

The Ground Water Quality Standards, (chapter 173-200 WAC), protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

Neither Raymond, nor South Bend's Plant discharge wastewater to the ground. No permit limits are required to protect ground water.

K. Comparison Of Effluent Limits With The Previous:

Raymond Permit Issued on February 6, 1997, and

South Bend Permit Issued on January 31, 1997.

Table 15: Comparison of Raymond's Effluent Limits to Regional Plant Limits

	Basis of Limit	**Previous Effluent Limits (Interim): Outfall # 001**		**Proposed Regional Plant Effluent Limits: Outfall # 001**	
Parameter		**Average Monthly**	**Average Weekly**	**Average Monthly**	**Average Weekly**
Carbonaceous Biochemical Oxygen Demand (5-day)	Technology	25.0 mg/L, 150 lbs/day	40.0 mg/L, 240 lbs/day	25 mg/L, 277 lbs/day 85% removal of influent	38 mg/L, 416 lbs/day 85% removal of influent
Total Suspended Solids	Technology	30 mg/L, 180 lbs/day	45 mg/L, 270 lbs/day	30 mg/L, 434 lbs/day 85% removal of influent	45 mg/L, 651 lbs/day 85% removal of influent
Fecal Coliform Bacteria	Technology	200/100 mL	400/100 mL	200/100 mL	400/100 mL
pH	Technology	6.0 – 9.0 std units		6.0 – 9.0 std units	
Parameter		**Average Monthly**	**Daily Maximum**	**Average Monthly**	**Daily Maximum**
Total Residual Chlorine	Technology	0.10 mg/L, 0.60 lbs/day	0.25 mg/L, 1.5 lbs/day	Chlorine not used	Chlorine not used
*Ammonia	Water Quality	N/A	N/A	23 mg/L	46 mg/L

Table 16: Comparison of South Bend's Effluent Limits to Regional Plant's Limits

	Basis of Limit	**Previous Effluent Limits (Interim): Outfall # 001**		**Proposed Regional Plant Effluent Limits: Outfall # 001**	
Parameter		**Average Monthly**	**Average Weekly**	**Average Monthly**	**Average Weekly**
Biochemical Oxygen Demand (5-day) **Or** Carbonaceous Biochemical Oxygen Demand (5-Day)	Technology	30.0 mg/L, 150 lbs/day (BOD_5)	45.0 mg/L, 240 lbs/day (BOD_5)	25 mg/L, 277 lbs/day 85% removal of influent ($CBOD_5$)	38 mg/L, 416 lbs/day 85% removal of influent ($CBOD_5$)

	Basis of Limit	**Previous Effluent Limits (Interim): Outfall # 001**		**Proposed Regional Plant Effluent Limits: Outfall # 001**	
Parameter		**Average Monthly**	**Average Weekly**	**Average Monthly**	**Average Weekly**
Total Suspended Solids	Technology	75 mg/L, 228 lbs/day	112.5 mg/L, 341 lbs/day	30 mg/L, 434 lbs/day 85% removal of influent	45 mg/L, 651 lbs/day 85% removal of influent
Fecal Coliform Bacteria	Technology	200/100 mL	400/100 mL	200/100 mL	400/100 mL
pH	Technology	6 - 9 std units		6 - 9 std units	
Parameter		**Average Monthly**	**Daily Maximum**	**Average Monthly**	**Daily Maximum**
Total Residual Chlorine	Technology		200 µg/L	Chlorine not used	Chlorine not used
*Ammonia (May – September)	Water Quality	N/A	N/A	23 mg/L	46 mg/L

*Ammonia limits may be removed if it can be shown that the new Willapa Regional Plant shows no reasonable potential to violate ammonia limits. The Lower Willapa Dissolved Oxygen TMDL allocations will still place limitations on NH_3-N as shown in the following tables.

Repeat of Table 11: Wasteload Allocation for Equivalent Oxygen Demand (EOD) before Regionalization (Interim Limits)

Facility	**EOD (µg/L)**	**Formula [(1)]**
Raymond WWTP	99	$(0.207)(CBOD_5) + (0.420)(NH_3 – N) \leq 99$
South Bend WWTP	25	$(0.067)(CBOD_5) + (0.132)(NH_3 – N) \leq 25$
East Point Seafoods (Dungeness Development)	45	$(0.031)(CBOD_5) + (0.178)(NH_3 – N) \leq 45$
South Bend Packers	5	$(0.027)(CBOD_5) + (0.155)(NH_3 – N) \leq 5$
Coast Seafoods	15	$(0.019)(CBOD_5) + (0.109)(NH_3 – N) \leq 15$
Reserve	10	
Total WLAs	199	

[(1)] $CBOD_5$ and NH_3 –N loadings are unit of lbs/day weekly average.

The following table provides the distribution and cumulative wasteload allocations after the combining of the Raymond and South Bend wastewater flows to a new Willapa Regional Plant at the Raymond Treatment Plant site.

Repeat of Table 12: Wasteload Allocation for Equivalent Oxygen Demand (EOD) after Regionalization (Final Limits)

Facility	EOD (µg/L)	Formula [(1)]
Willapa Regional WWTP	124	$(0.207)(CBOD_5) + (0.420)(NH_3 – N) \leq 124$
East Point Seafoods (Dungeness Development)	45	$(0.031)(CBOD_5) + (0.178)(NH_3 – N) \leq 45$
South Bend Packers	5	$(0.027)(CBOD_5) + (0.155)(NH_3 – N) \leq 5$
Coast Seafoods	15	$(0.019)(CBOD_5) + (0.109)(NH_3 – N) \leq 15$
Reserve	10	
Total WLAs	199	

[(1)] $CBOD_5$ and NH_3 –N loadings are unit of lbs/day weekly average.

IV. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for a 2.92 million gallon per day activated sludge plant.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

A. Lab Accreditation

Ecology requires that all monitoring data (with the exception of certain parameters) must be prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Ecology accredited the laboratory at this facility for (list parameters): BOD_5/$CBOD_5$, TSS, pH, Fecal Coliform, chlorine residual, and Ammonia.

V. OTHER PERMIT CONDITIONS

A. Reporting and Recordkeeping

Ecology based permit condition S3 on our authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. Prevention of Facility Overloading

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

C. Operation and Maintenance (O&M)

The proposed permit contains condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

D. Pretreatment

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), Ecology has been delegated authority to administer the Pretreatment Program**.** Under this delegation of authority, Ecology issues wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue their own wastewater discharge permits. The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program [40 CFR 403.8(f)(1)(iii)], Ecology is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i)].

Ecology is responsible for issuing State Waste Discharge Permits to industrial users of the sewer system. Industrial dischargers must obtain these permits from Ecology before the POTW accepts the discharge [WAC 173-216-110(5)] Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to take "continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs)" discharging to their sewer system. Examples of such routine measures include regular review of business tax licenses, water billing records and existing connection authorization records. System maintenance personnel can also identify and report new industrial dischargers in the course of performing their jobs. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW must notify an industrial

discharger, in writing, of their responsibility to apply for a state waste discharge permit and send a copy of the written notification to Ecology.

Requirements for Performing an Industrial User Survey

This POTW has the potential to serve significant industrial or commercial users and is required to perform an Industrial User Survey. The goal of this survey is to develop a list of SIUs and PSIUs. Of equal importance, the survey should provide sufficient information about industries which discharge to the POTW to determine whether they require state waste discharge permits or other regulatory controls. An Industrial User Survey helps to prevent interference with treatment processes at the POTW and to protect water quality. The Industrial User Survey can also help maintain sludge quality, so that sludge can be a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential significant industrial users.".

Support by Ecology for Developing Partial Pretreatment Program by POTW

Ecology commits to providing technical and legal assistance to Raymond and South Bend in fulfilling these joint obligations. In particular, Ecology will assist with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

E. Solid Waste Handling

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW, Chapter 173-308 WAC "Biosolids Management," and Chapter 173-350 WAC "Solid Waste Handling Standards". The disposal of other solid waste is under the jurisdiction of the Pacific County Health Department.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will be used by Ecology to develop or update local limits and is also required under 40 CFR 503.

I. Outfall Evaluation

The proposed permit requires Raymond and South Bend to conduct an outfall inspection and submit a report detailing the findings of that inspection (Condition S.11). The inspection must evaluate the physical condition of the discharge pipe and diffusers, and evaluate the extent of sediment accumulations in the vicinity of the outfall.

J. General Conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual municipal NPDES permits issued by Ecology.

VI. PERMIT ISSUANCE PROCEDURES

A. Permit Modifications

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for ground waters, based on new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed Permit Issuance

This proposed permit meets all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five years.

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

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Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

2006. Permit Writer's Manual. Publication Number 92-109 (http://www.ecy.wa.gov/biblio/92109.html)

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Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

2006. Willapa River Dissolved Oxygen Total Maximum Daily Load: Water Quality Improvement Report and Implementation Plan. Publication Number 06-10-017. (http://www.ecy.wa.gov/biblio/0610017.html)

2007. Willapa River Fecal Coliform Bacteria Total Maximum Daily Load Water Quality Improvement Report. Publication No. 07-03-021. (http://www.ecy.wa.gov/biblio/0703021.html).

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to issue a permit to the Raymond, South Bend, and Willapa Regional Wastewater Treatment Plant. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facilities and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 18, 2008, and June 25, 2008, in the *Chinook Observer* to inform the public about the submitted application and to invite comment on the issuance of this permit.

Ecology will place a Public Notice of Draft on January 7, 2009, in the *Willapa Harbor Herald* to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The Notice –

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website.).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES Permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at http://www.ecy.wa.gov/biblio/0307023.html.

You may obtain further information from Ecology by telephone at 360-407-627* or by writing to the address listed below.

Carey Cholski
Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

The primary author of this permit and fact sheet is Al Bolinger, P.E.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor (DF)--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's homepage at http://www.ecy.wa.gov.

The following three Visual Plumes runs are from May, August, and November data respectively:

Willapa Regional WWTP Acute 10th percentile Current_May
/ Windows UM3. 4/29/2008 4:04:35 PM
Case 1; ambient file C:\Plumes\Raymond Acute 10th percentile current_Feb.001.db; Diffuser table record 1:

Depth	Amb-cur	Amb-dir	Amb-sal	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn
m	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2
0.0	0.13	0.0	1.04	10.93	0.0	0.0	0.47	0.0	0.003
1.0	0.13	0.0	107.0	10.95	0.0	0.0	0.47	0.0	0.003
2.0	0.13	0.0	1.14	10.96	0.0	0.0	0.47	0.0	0.003
3.0	0.13	0.0	1.75	11.14	0.0	0.0	0.47	0.0	0.003
4.0	0.13	0.0	2.28	11.27	0.0	0.0	0.47	0.0	0.003
5.0	0.13	0.0	2.9	11.4	0.0	0.0	0.47	0.0	0.003

P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrncMZ	P-depth	Ttl-flo	Eff-sal	Temp	Polutnt
(in)	(ft)	(deg)	(deg)	()	(ft)	(ft)	(ft)	(m)	(MGD)	(psu)	(C)	(kg/kg)
12.0	1.0	45.0	45.0	2.0	12.192	22.0	220.0	6.0	5.91	0.05	16.0	1.0

Froude number: 19.25

Step	Depth	Amb-cur	P-dia	Polutnt	Dilutn	x-posn	y-posn	
	(m)	(m/s)	(in)	(kg/kg)	()	(m)	(m)	
0	6.0	0.13	12.0	1.0	1.0	0.0	0.0;	
100	4.195	0.13	74.92	0.138	7.228	1.704	1.231;	
110	3.936	0.13	88.48	0.113	8.81	2.046	1.399;	trap level,
135	3.29	0.13	131.5	0.069	14.45	3.14	1.828;	merging,
163	2.649	0.13	214.0	0.0456	21.9	5.138	2.393;	surface,

Const Eddy Diffusivity. Farfield dispersion based on wastefield width of 8.06 m

conc	dilutn	width	distnce	time				
(kg/kg)		(m)	(m)	(hrs)	(kg/kg)	(s-1)	(m/s)	(m0.67/s2)
4.55E-2	21.92	8.414	8.0	0.00138	0.0	0.0	0.47	0.003
4.53E-2	22.02	9.519	16.0	0.00611	0.0	0.0	0.47	0.003
4.38E-2	22.77	10.51	24.0	0.0108	0.0	0.0	0.47	0.003
4.18E-2	23.9	11.41	32.0	0.0156	0.0	0.0	0.47	0.003
3.97E-2	25.17	12.25	40.0	0.0203	0.0	0.0	0.47	0.003
3.77E-2	26.47	13.03	48.0	0.025	0.0	0.0	0.47	0.003
3.60E-2	27.75	13.77	56.0	0.0297	0.0	0.0	0.47	0.003
3.44E-2	29.01	14.47	64.0	0.0345	0.0	0.0	0.47	0.003
3.30E-2	30.24	15.14	72.0	0.0392	0.0	0.0	0.47	0.003

count: 9

4:04:35 PM. amb fills: 2

Page 1

Willapa Regional WWTP Acute 10th percentile Current_August

/ Windows UM3. 4/29/2008 4:10:13 PM

Case 1; ambient file C:\Plumes\Raymond Acute 10th percentile current_May.001.db; Diffuser table record 1:

Depth	Amb-cur	Amb-dir	Amb-sal	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn
m	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2
0.0	0.13	0.0	19.69	18.66	0.0	0.0	0.47	0.0	0.003
1.0	0.13	0.0	20.31	18.48	0.0	0.0	0.47	0.0	0.003
2.0	0.13	0.0	20.75	18.38	0.0	0.0	0.47	0.0	0.003
3.0	0.13	0.0	21.19	18.28	0.0	0.0	0.47	0.0	0.003
4.0	0.13	0.0	21.37	18.24	0.0	0.0	0.47	0.0	0.003
5.0	0.13	0.0	21.49	18.22	0.0	0.0	0.47	0.0	0.003

P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrncMZ	P-depth	Ttl-flo	Eff-sal	Temp	Polutnt
(in)	(ft)	(deg)	(deg)	()	(ft)	(ft)	(ft)	(m)	(MGD)	(psu)	(C)	(kg/kg)
12.0	1.0	45.0	45.0	2.0	12.192	22.0	220.0	6.0	5.91	0.05	16.0	1.0

Froude number: 8.131

Step	Depth (m)	Amb-cur (m/s)	P-dia (in)	Polutnt (kg/kg)	Dilutn ()	x-posn (m)	y-posn (m)
0	6.0	0.13	12.0	1.0	1.0	0.0	0.0;
100	4.043	0.13	69.14	0.138	7.147	1.579	1.148;
143	2.37	0.13	129.2	0.0589	16.73	3.121	1.757; merging,
157	1.496	0.13	169.0	0.0446	22.07	4.022	1.997; axial vel 0.163 surface,

Const Eddy Diffusivity. Farfield dispersion based on wastefield width of 6.92 m

conc (kg/kg)	dilutn	width (m)	distnce (m)	time (hrs)	(kg/kg)	(s-1)	(m/s)	(m0.67/s2)
4.46E-2	22.08	7.415	8.0	0.00207	0.0	0.0	0.47	0.003
4.41E-2	22.36	8.435	16.0	0.0068	0.0	0.0	0.47	0.003
4.22E-2	23.39	9.344	24.0	0.0115	0.0	0.0	0.47	0.003
3.99E-2	24.74	10.17	32.0	0.0163	0.0	0.0	0.47	0.003
3.77E-2	26.18	10.94	40.0	0.021	0.0	0.0	0.47	0.003
3.58E-2	27.62	11.65	48.0	0.0257	0.0	0.0	0.47	0.003
3.41E-2	29.04	12.33	56.0	0.0304	0.0	0.0	0.47	0.003
3.25E-2	30.41	12.97	64.0	0.0352	0.0	0.0	0.47	0.003
3.12E-2	31.74	13.57	72.0	0.0399	0.0	0.0	0.47	0.003

count: 9

4:10:14 PM. amb fills: 2

Page 1

Willapa Regional WWTP Chronic 50th Percentile Current_Nov
/ Windows UM3. 4/30/2008 11:06:38 AM
Case 1; ambient file c:\plumes\VP plume 8.001.db; Diffuser table record 1:

Depth	Amb-cur	Amb-dir	Amb-sal	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn
m	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2
0.0	0.47	0.0	2.54	10.93	0.0	0.0	0.47	0.0	0.003
1.0	0.47	0.0	4.18	10.95	0.0	0.0	0.47	0.0	0.003
2.0	0.47	0.0	4.69	10.96	0.0	0.0	0.47	0.0	0.003
3.0	0.47	0.0	4.94	11.14	0.0	0.0	0.47	0.0	0.003
4.0	0.47	0.0	5.48	11.27	0.0	0.0	0.47	0.0	0.003
5.0	0.47	0.0	6.65	11.4	0.0	0.0	0.47	0.0	0.003

P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrncMZ	P-depth	Ttl-flo	Eff-sal	Temp	Polutnt
(in)	(ft)	(deg)	(deg)	()	(ft)	(ft)	(ft)	(m)	(MGD)	(psu)	(C)	(kg/kg)
12.0	1.0	45.0	45.0	2.0	40.0	22.0	220.0	6.0	2.91	0.05	16.0	1.0

Froude number: 6.66

Step	Depth	Amb-cur	P-dia	Polutnt	Dilutn	x-posn	y-posn	
	(m)	(m/s)	(in)	(kg/kg)	()	(m)	(m)	
0	6.0	0.47	12.0	1.0	1.0	0.0	0.0;	
100	5.632	0.47	43.26	0.139	7.148	0.865	0.246;	
178	4.939	0.47	94.55	0.0297	33.47	6.736	0.551;	acute zone,
188	4.791	0.47	104.4	0.0244	40.8	8.514	0.595;	trap level,
200	4.602	0.47	117.7	0.0192	51.75	11.51	0.654;	
210	4.497	0.47	130.0	0.0158	63.09	16.67	0.736;	local maximum rise or fall,

Plumes not merged, Brooks method may be overly conservative.
Const Eddy Diffusivity. Farfield dispersion based on wastefield width of 11.92 m

conc	dilutn	width	distnce	time				
(kg/kg)		(m)	(m)	(hrs)	(kg/kg)	(s-1)	(m/s)	(m0.67/s2)
1.58E-2	63.12	13.14	24.0	0.00432	0.0	0.0	0.47	0.003
1.56E-2	63.71	14.36	32.0	0.00905	0.0	0.0	0.47	0.003
1.52E-2	65.46	15.47	40.0	0.0138	0.0	0.0	0.47	0.003
1.46E-2	67.89	16.52	48.0	0.0185	0.0	0.0	0.47	0.003
1.40E-2	70.64	17.5	56.0	0.0232	0.0	0.0	0.47	0.003
1.35E-2	73.5	18.43	64.0	0.028	0.0	0.0	0.47	0.003
1.30E-2	76.38	19.31	72.0	0.0327	0.0	0.0	0.47	0.003

count: 7
;
11:06:38 AM. amb fills: 2

Page 1

Table 6 Effluent Reflux Concentrations for 1 MGD Flow Rate

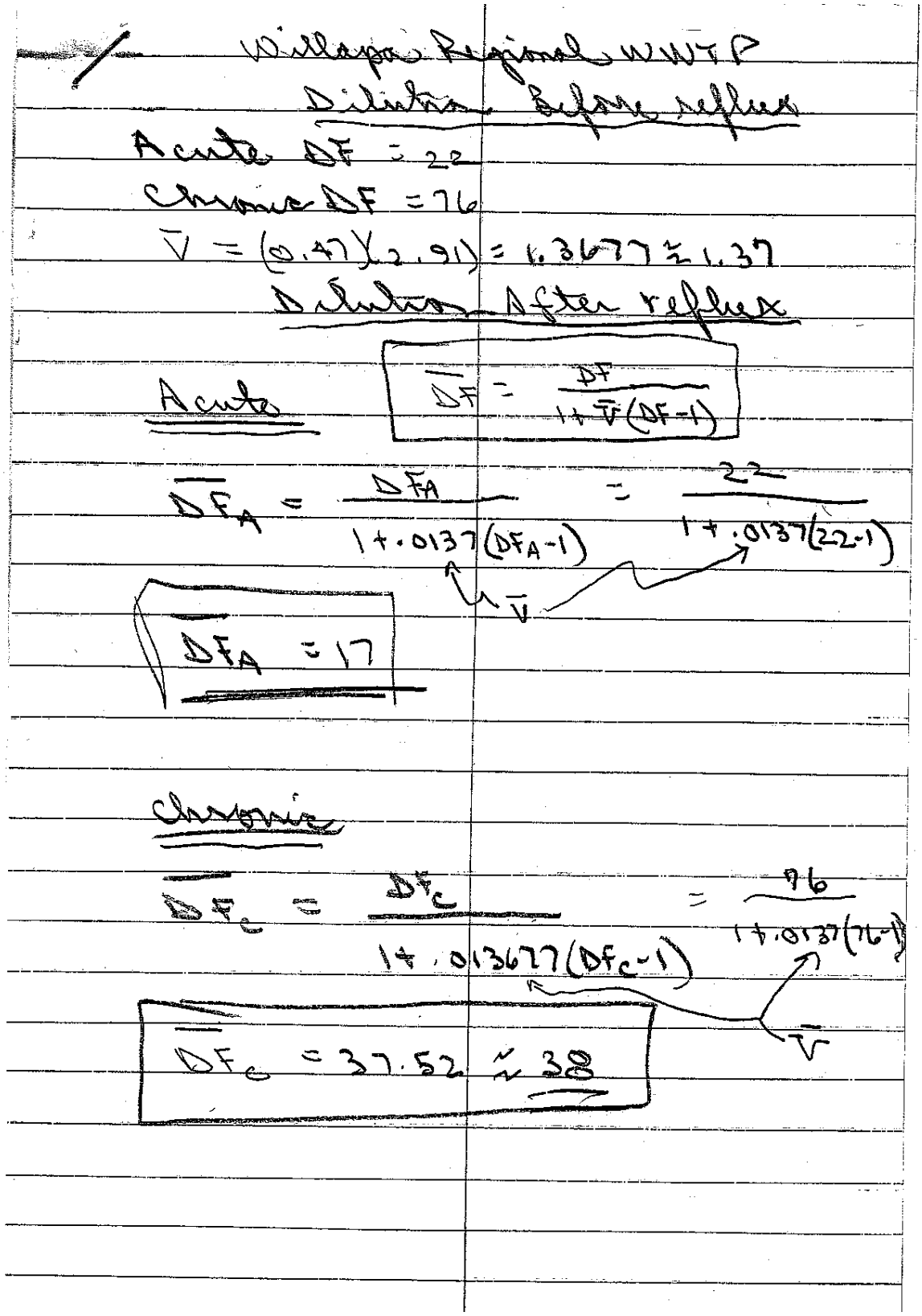
Outfall Segment	Reflux @ Seg 12	Reflux @ Seg 15	Reflux @ Seg 23
12	0.25%	0.27%	0.32%
15	0.21%	0.31%	0.37%
23	0.18%	0.26%	0.47%

Table 7 Reflux Concentrations for Outfall Alternatives

Alternative	South Bend WWTP			Raymond WWTP			Cumulative Reflux @ SB Outfall
	WASP Discharge Segment	Effluent Flow	Reflux @ Raymond Outfall	Discharge Segment	Effluent Flow	Reflux @ Raymond Outfall	
1	12	0.876	0.28%	23	1.850	0.87%	1.15%
2	15	0.876	0.28%	15	1.850	0.57%	0.85%
3	23	0.876	0.41%	23	1.850	0.87%	1.28%

2.91(.47) = 1.3677 = 1.37
Max. month flow for Willapa reg

Reflux was also measured directly during a dye tracer study conducted in 1995 (Cosmopolitan Engineering Group, 1995). The reflux fraction determined from that study for an effluent flow rate of 2.56 mgd was only 0.35 percent effluent, which is lower than the modeled reflux in Tables 6 and 7. For this mixing zone study, we will use the more conservative reflux concentrations from Table 7.


Willapa Regional WWTP
Dilution before reflux
Acute DF = 22
Chronic DF = 76
$\bar{V} = (0.47)(2.91) = 1.3677 \approx 1.37$
Dilution After reflux
Acute
$\overline{DF} = \frac{DF}{1 + \bar{V}(DF-1)}$
$\overline{DF_A} = \frac{DF_A}{1 + .0137(DF_A - 1)} = \frac{22}{1 + .0137(22-1)}$
$\bar{V}$
$DF_A = 17$
Chronic
$\overline{DF_C} = \frac{DF_C}{1 + .013677(DF_C - 1)} = \frac{76}{1 + .0137(76-1)}$
$\bar{V}$
$DF_C = 37.52 \approx 38$

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)

CALCULATIONS

				State Water Quality Standard		Max concentration at edge of...												
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved) ug/L	Acute ug/L	Chronic ug/L	Acute Mixing Zone ug/L	Chronic Mixing Zone ug/L	LIMIT REQ'D?	Effluent percentile value	Pn	Max effluent conc. measured (metals as total recoverable) ug/L	Coeff Variation CV	s	# of samples n	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS
Ammonia (as NH3-N)			113.0000	5635.0000	846.0000	3102.17	1450.26	YES	0.95	0.957	53000.00	0.60	0.55	6	0.96	17	38	
Cadmium			0.0200	42.0000	9.3000	0.04	0.03	NO	0.95	0.050	0.05	0.60	0.55	1	6.20	17	38	
Copper			1.2000	4.8000	3.1000	2.66	1.85	NO	0.95	0.050	4.20	0.60	0.55	1	6.20	17	38	
Lead			0.0200	151.0000	5.8000	4.90	2.21	NO	0.95	0.050	13.40	0.60	0.55	1	6.20	17	38	
Mercury			0.0060	2.1000	0.0250	0.01	0.01	NO	0.95	0.050	0.01	0.60	0.55	1	6.20	17	38	
Silver			0.0200	1.9000	1000.0000	0.02	0.02	NO	0.95	0.050	0.01	0.60	0.55	1	6.20	17	38	
Zinc			0.6000	90.0000	81.0000	11.87	5.64	NO	0.95	0.050	31.00	0.60	0.55	1	6.20	17	38	

PARAMETER	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator Acute	Metal Criteria Translator Chronic	Ambient Concentration µg/L	Water Quality Standard Acute µg/L	Water Quality Standard Chronic µg/L	Average Monthly Limit (AML) µg/L	Maximum Daily Limit (MDL) µg/L
Ammonia (as N)	17.0	38.0			113.0000	5635.0000	846.0000	**22899.4**	**45940.5**
Chlorine	17.0	38.0				13.00	7.50	**84.4**	**221.0**
Copper	17.0	38.0			1.2000	4.80	3.10	**42.8**	**62.4**
Lead	17.0	38.0			0.0200	151.00	5.80	**247.3**	**360.8**
Mercury	17.0	38.0			0.0060	2.1000	0.0250	**0.8**	**1.2**
Zinc	17.0	38.0			0.6000	90.00	81.00	**1042.2**	**1520.4**

Calculation of seawater fraction of un-ionized ammonia from Hampson (1977). Un-ionized ammonia criteria for salt water are from WAC 173-201A and EPA 440/5-88-004.

INPUT

1. Temperature (deg C): 20.0

2. pH: 8.0

3. Salinity (g/Kg): 2.8

OUTPUT

1. Unionized ammonia NH3 criteria (mgNH3/L)
   Acute: 0.233
   Chronic: 0.035

2. Total ammonia nitrogen criteria (mgN/L)
   Acute: 5.577
   Chronic: 0.838

APPENDIX D--RESPONSE TO COMMENTS

Comments were received via e-mail February 9, 2009 from Gray & Osborne, Inc. The mailed copy was received February 13, 2009.

A. Draft NPDES Permit:

Comment 1:

Permit, page 5, Summary of Permit Report Submittals: For the frequency of submittals required for Permit Section S10.F, Chronic Toxicity Effluent Test Results with Permit Renewal Application, change "2/permit cycle" to "2/permit cycle, Regional Plant Only."

Response 1:

Changes were made to S10.F as well as S9.F.

Comment 2:

Permit, page 7, Raymond WWTP Interim Effluent Limitations, Outfall #1 (footnote "g"), in Equation 2, change "0.178 * $(NH_3\text{-}N)_{EP}(DD)$" to "0.178 * $(NH_3\text{-}N)_{EP(DD)}$."

Response 2:

Change was made.

Comment 3:

Permit, pages 6 through 9, Raymond and South Bend WWTP Interim Effluent Limitations, Outfall #1. The following comments were provided in the factual review period and are repeated here. We acknowledge that aspects of the permit language in question were discussed in the development of the Willapa River Dissolved Oxygen TMDL; however, as noted below, the permit language is potentially problematic for the Cities. In the interest of cooperation and withdraw these two comments if Comment 7 regarding the Monitoring Schedule were accepted.

a. EOD Limits for Existing Raymond and South Bend WWTPs

The permits should not include interim EOD limits. EOD limits should only become effective when the regional WWTP comes online. It is standard when a TMDL established stricter limits on a discharger that there is a period allowed to design and construct the necessary facilities. This is described in Section 3.3.14 of Chapter VI of the NPDES Permit Writer's Manual (July 2004 version). Ecology could determine interim "performance-based" limits and a compliance schedule for the period until the regional plant is online. EOD limits should not be applied to the Raymond and South Bend WWTPs in the interim.

b. Footnote "g"

The language under the individual EOD limit should be revised. The limit for the regional final limit, Footnote h1 includes "…or when EOD_T is determinate, for example, through a failure to sample or report by any discharger listed in footnote h2 below." The regional WWTP should not be penalized in the event of another discharger's failure to sample or report. Instead, the full individual EOD limit for any entity not reporting should be entered into the EOD_T equation in Footnote h2. Ecology's enforcement action would then be directed only toward the party that did not report.

Response 3:

The EOD (TMDL) requirements will remain in interim South Bend and Raymond NPDES Permits to be consistent with requirements of other dischargers in WERM agreement.

Comment 4:

Permit, page 11, Item B, Mixing Zone Descriptions and Dilution Factors, Acute Mixing Zone. Change "seabed" to "riverbed" in the sixth line of this section or change "seabed" to "seabed (riverbed)."

Response 4:

Change was made to the permit.

Comment 5:

Permit, page 11, Item B, Mixing Zone Description and Dilution Factors. Change the outline number for the city of Raymond Wastewater Treatment Plant from B.1. to B.2 (B.1 is repeated in the current version).

Response 5:

Change was made to the permit.

Comment 6:

Permit, page 11, Item B, Mixing Zone Descriptions and Dilution Factors, City of Raymond Wastewater Treatment Plant. Change the sentence "The mixing zone is the same location and has the same dimensions as the Willapa Regional Wastewater Treatment Plant" to "The mixing zone for the Willapa Regional Treatment Plant is in the same location and has the same dimensions as the existing mixing zone."

Response 6:

Change was made to the permit.

Comment 7:

Permit, page 15, Item C, Willapa Regional Monitoring Schedule. Change the Minimum Sampling Frequency for monitoring influent and effluent CBOD5, TSS, fecal coliform, and EOD from "3/week" to "2/week."

Per the Fact Sheet (page 34) "specified monitoring frequencies take into account the *quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.*" These criteria are addressed below:

- Quantity and Variability of the Discharge and the Treatment Method

  The new WWTP will be built to current state-of-the art standards and will have minimal variability in the nature of its discharge. Influent loadings are relatively consistent since Vanson reduced the maximum daily flow and loadings in its discharge.

- Past Compliance

  The Raymond WWTP has had a good compliance history that will only improve after the construction of the new plant.

- Significance of Pollutants

  With minimal industrial loadings and a stable activated sludge plant built to current state-of-the art standards, the effluent from the WWTP should not contain significant concentrations of industrial pollutants or toxic compounds.

- Cost of Monitoring

  The proposed monitoring schedule will present a significant burden on plant staff and may require hiring an additional FTE.

Although the rated maximum month capacity of the new plant is 2.91 mgd, over 75 percent of this flow is I/I. Thus, monitoring requirements and frequencies more typically associated with smaller plants (as shown in Table XIII-1C in the *Permit Writer's Manual* for plants with average flows less than 2 mgd) are appropriate here. The proposed high frequency will constitute a significant economic and operational burden. The other WERM dischargers are only required to test once a week. Twice a week is adequate and appropriate for the Willapa Regional WWTP.

Response 7:

Changes were made to the permit.

Comment 8:

Permit, page 16, Item C, Willapa Regional Monitoring Schedule. Change the Minimum Sampling Frequency for monitoring equivalent oxygen demand (EOD) in the effluent from "3/week) to "2/week" when EOD limits are in effect," since requiring monitoring and reporting of EOD when no limits are in effect would constitute an unnecessary burden on plant staff.

Response 9:

Change was made to the permit.

Comment 10:

Permit, page 18, Item C, Willapa Regional Monitoring Schedule, Reapplication Monitoring. In footnote "I," delete the words "and on a rotational basis throughout the days of the week," as such a requirement will cause an unnecessary burden on plant staff, requiring weekend completion of BOD_5 and $CBOD_5$ tests.

Although the rated maximum month capacity of the new plant is 2.91 mgd, over 75 percent of this flow is I/I. Thus, monitoring requirement and frequencies more typically associated with smaller plants are appropriate here. The proposed rotational schedule will constitute a significant economic and operational burden. (See the discussion in Comment 7.)

Response 10:

Change was made to the permit.

Comment 11:

Permit, page 18, Item C, Willapa Regional Monitoring Schedule, Reapplication Monitoring. Footnote "j" needs to be revised to reflect calculation of EOD instead of percent removal, since the term "Calculation" is only applied to determination of EOD in the table.

Response 11:

Change was made to the permit.

B. Draft Fact Sheet

Comment 12:

Fact Sheet, Summary (unnumbered cover page). In the third paragraph in this section, delete the words "for the months of May through September" in the last sentence, in order to be consistent with the permit.

Response 12:

Change was made to the fact sheet.

Comment 13:

Fact Sheet, Summary (unnumbered cover page), fourth paragraph, second sentence. Revise from "Ecology corrected any errors or omissions regarding the facility's…" to "Ecology corrected any noted errors or omissions regarding the facilities'…"

Response 13:

Change was made to the fact sheet.

Comment 14:

Fact Sheet, page 5, Treatment Processes, Raymond. In the twelfth line in the first paragraph, change the word "conbined" to "combined."

Response 14:

Change was made to the fact sheet.

Comment 15:

Fact Sheet, page 7, Willapa Regional Wastewater Treatment Plant. Add the following sentence to the end of the first paragraph: "Additionally, the plant receives leachate trucked from a nearby landfill."

Response 15:

Change was made to the fact sheet.

Comment 16:

Fact Sheet, page 10, Solid Wastes. Delete the words "grit" and "scum" from the fourth line. Change the word "screenings" to "other screened debris."

Response 16:

Change was made to the fact sheet.

Comment 17:

Fact Sheet, page 32, Table 16. Clarification (in the table or a footnote) should be provided for the "Proposed Regional Plant Effluent Limits" column to indicate that the applicable limits for South Bend are changing from BOD_5 to $CBOD_5$ when the new regional WWTP goes online.

Response 17:

Change was made to the fact sheet.